REMARKS

35 USC 112 Rejections

The Examiner notes that the claim 1 limitation of Co being "about 1 to about 48%" is not supported in the Description, since the Description discloses only "about 1.5 to about 48 weight percent." Applicants respond that the lower limit of about 1% is disclosed in the originally filed application in cancelled claims 8 and 34 (". . . wherein said cobalt is present in an amount within the range of about 48 to about 1 weight percent of the total weight of the composition"). Accordingly, this Amendment adds this limitation from originally-filed claim 8 to the Description, to provide support directly from the Description for this limitation in claim 1. New claim 67 recites the other lower limit -- about 1.5% -- that is supported in the originally-filed Description.

Further regarding claim 1, the Examiner asserts that the specification, while being enabling for glucose molecules, is not enabling for other organics. Applicants respond that even though the preferred embodiment relates to glucose, the originally filed specification supports recitation of other sugars and organic chemicals in general. For example, at p. 2, lines 19-29 ("This invention provides the composition of a catalyst that allows direct electrochemical oxidation of **organic** molecules, including **carbohydrates** and **short chain alcohols**. . . . Other **organic** molecule based fuels like **arabinose, mannitol, galactose, mannose, sorbitol, xylose, methanol**, and **ethanol** can also power the fuel cell with different power densities.") and original claim 1 ("1. A method for catalytically oxidizing **organic** molecules comprising: passing a solution containing organic molecules over a catalyst . . .") (bold face added). The Examiner acknowledges that the specification provides enablement for the preferred embodiment entailing glucose. Per MPEP 2164.01(b), this fulfills the enablement requirement for the claimed "organic molecules."

In claim 1, the Examiner interprets the phraseology of the "passing . . ." step as not technically requiring electrochemical oxidation. This is herein remedied by deleting the "passing . . ." phrase of claim 1 and instead starting the step with the phrase "catalyzing electrochemical oxidation . . ."

In response to the Examiner's enablement rejection of claim 9, claim 9 and its dependent claim 10 are canceled only to expedite allowance of this case.

Claim 53 recites oxidation of organic molecules to gluconic acid. The Examiner asserts that the specification enables conversion of only glucose molecules to gluconic acid. To expedite allowance, claim 53 is herein amended to limit the claimed organic molecules to glucose molecules.

Independent Claim 1

Claim 1 recites catalyzing electrochemical oxidation of organic molecules with a catalyst. The catalyst comprises platinum, about 1-48% cobalt, and tin. This claimed catalyst is not obvious over Dupin as the Examiner contends. Dupin (col. 3, lines 31-38; cited by the Examiner) discloses preparing a catalyst from "at least one element selected from the group comprising copper, silver, zinc, cadmium, yttrium, the lanthanides, chromium, molybdenum, tungsten, manganese, iron, cobalt, rhodium, iridium, nickel, palladium, platinum, tin and bismuth . . ." Of these, the "lanthanides" group includes 15 elements (La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu). Accordingly, Dupin presents a list of 33 elements – almost a third of all elements known to man – from which to choose "at least one" to fabricate a catalyst. Dupin provides no guidance to arrive at the claimed 3-element combination (Pt, Co, Sn) of claim 1. This claimed combination is just one of 32,736 possible 3-element combinations that could be made from Dupin's listed elements. So the skilled person would have never been lead by Dupin to arrive at the claimed combination of elements, much less within the claimed Co concentration range.

Claim 1, as amended, further recites catalyzing "electrochemical oxidation . . .in liquid solution". In contrast, Dupin's oxidation is not "electrochemical" as claimed, since it does not entail input or output of electricity. Nor is Dupin's oxidation in liquid solution as claimed. It is instead in gas phase "carried out at temperatures above about 150°C and preferably at temperatures ranging from about 200 to 550°C." (Dupin, col. 4, lines 1-3). Dupin's high-temperature gas-phase oxidation is so different from the electrochemical liquid-phase oxidation of claim 1 that the skilled person would not consider applying Dupin's teachings to the claimed oxidation.

Therefore, on several grounds, claim 1 is patentable over the cited prior art.

New Independent Claim 68

Claim 68 recites a catalyst comprising platinum, about 1.5 to about 48% cobalt, and tin. The catalyst is used to catalyze electrochemical oxidation of glucose in liquid solution. Claim 68 is narrower than claim 1 in terms of reactant (the organic molecule is limited to glucose) and Co concentration (the lower limit is raised to 1.5%). These narrowed limitations distinguish claim 68 further from the sole reference (to Dupin) cited against claim 1.

Dupin, does not suggest the claimed catalyst composition (Pt, 1.5-48% Co, and Sn), the claimed electrochemical oxidation, or the claimed liquid solution. Therefore, on several grounds, claim 68 is patentable over the prior art of record.

Dependent Claims 2, 7, 11, 13, 49-55 and 62, 67 and 69-74

The remaining claims all depend from base claim 1, which is patentable over the prior art as explained above. The limitations that the dependent claims add to claim 1 distinguish them further from the prior art. Therefore, the dependent claims, also, are patentable.

The application is therefore now be in condition for allowance, and allowance is requested.

Respectfully submitted,

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